

# PERINEAL URETHROPLASTY: A NEW OPERATION FOR CORRECTION OF URINARY INCONTINENCE \*

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THE urologist is repeatedly faced with the problem of patients who have urinary incontinence secondary to loss of effective sphincter function resulting from operative trauma. Most cases of moderate postprostatectomy incontinence can be corrected by carefully instructing the patient to do perineal muscular exercises. If there is no success after a period of six months of such conservative therapy, the patient should be considered for an attempt at surgical correction of the incontinence.

It is obvious, in view of the many proposed techniques for correction of urinary incontinence, that there is not, as yet, a completely satisfactory method for correction of this urological problem. Several methods for correction of urinary incontinence have been generally advocated. The underlying principles in these techniques are:

1) Formation of a new vesical sphincter; 2) vesicourethral junction suspension or "gathering"; 3) elongation of the posterior urethra.

In this paper, we present a new operative technique using the voluntary control of the perineal musculature as a substitute for the damaged urinary sphincter. The rationale of the operative technique can be explained in part by the anatomical studies of Gil-Vernet\*\* whose studies indicated to him that the bladder sphincter is composed of three parts: 1) the internal vesical sphincter (smooth muscle fibers); 2) the second sphincter at the level of the membranous urethra (striated and smooth muscle fibers); 3) the third sphincter is a part of the bulbocavernosus muscle which encircles the bulb of the penis (smooth and

\* Awarded First Prize in Clinical Research April 17, 1963, at the Annual Meeting of the N.Y. Section of the American Urological Association. Read at the Section on Urology of the New York Academy of Medicine, January 15, 1964. (These studies are still in progress and this is a preliminary report.)

\*\* Gil-Vernet, S. *Physiologie de la miction. Estratto da Urologia*, Anno XXV, fasc.VI (1958), Anno XXVI, fasc.I & II (1959).

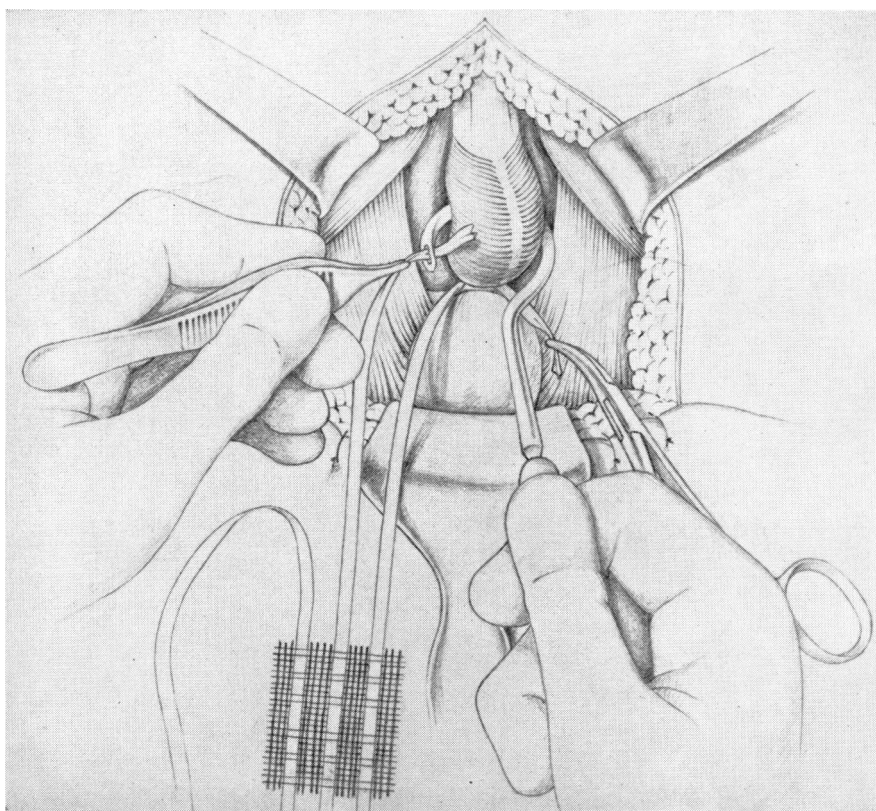


Fig. 1. Collagen prosthesis being passed anterior to bulbocavernosus muscle and membranous urethra.

striated muscle fibers). Gil-Vernet further states that the striated portions of the sphincters are innervated by the pudendal nerve, while the smooth muscles are innervated by the hypogastric plexus.

In this operation, reinforcement of the second and third parts of the sphincter is done by imbrication of the bulbocavernosus muscle and membranous urethra to the ischiocavernosus and levator ani muscles. The material used for muscle plication is absorbable, but the resulting fibrosis contributes to a mass action of the muscles. In our operative procedure we utilize muscles for reinforcement which are supplied by the same pudendal nerve which also innervates the striated portion of the external sphincter; thus attempting to provide physiological function at the sphincter level.

It is thought that the creation of such an artificial sphincter around the bulbous and membranous urethra by utilizing the voluntary pelvic

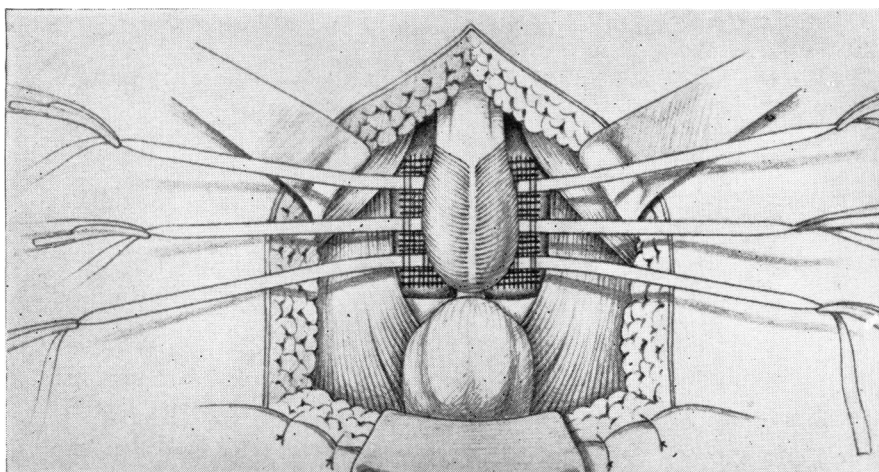


Fig. 2. Collagen prosthesis anterior to bulbocavernosus muscle and membranous urethra. (Notice the bulge of the rectum posterior to the membranous urethra.)

musculature helps in the control of urine by angulation and compression of the urethra.

Complete urological preoperative evaluation and preparation includes: 1) intravenous pyelograms, cystourethroscopy, and careful exclusion of any form of neurogenic bladder; 2) radiographic visualization of the urethra by cystourethrogram; (resting, voiding and choke type); 3) cinefluorographic bladder and urethral studies (if they are available; 4) bowel preparation as a precautionary measure.

Under appropriate anesthesia, the patient is placed in the perineal position. The operative area is prepared and draped in the usual manner. A #18 Foley catheter with a 5 cc. balloon is passed through the urethra into the bladder, and the balloon is inflated.

An inverted "Y" incision with its vertical stem extending about 2 cm. above the anus is found to be more adequate than the classical perineal incision. An O'Connor drape is fixed to the lower lip of the incision to prevent any wound contamination during the rectal separation perineally. The incision is extended through the subcutaneous fascia and fat to develop the ischiorectal fossae.

The transverse perineal muscles are exposed and lifted anteriorly. The medial borders of the levator ani muscles are visualized and developed by deeper undermining. Anteriorly the ischiocavernosus muscles are developed to their origin at the ischial tuberosities. In the median plane the bulbous urethra surrounded by the bulbocavernosus

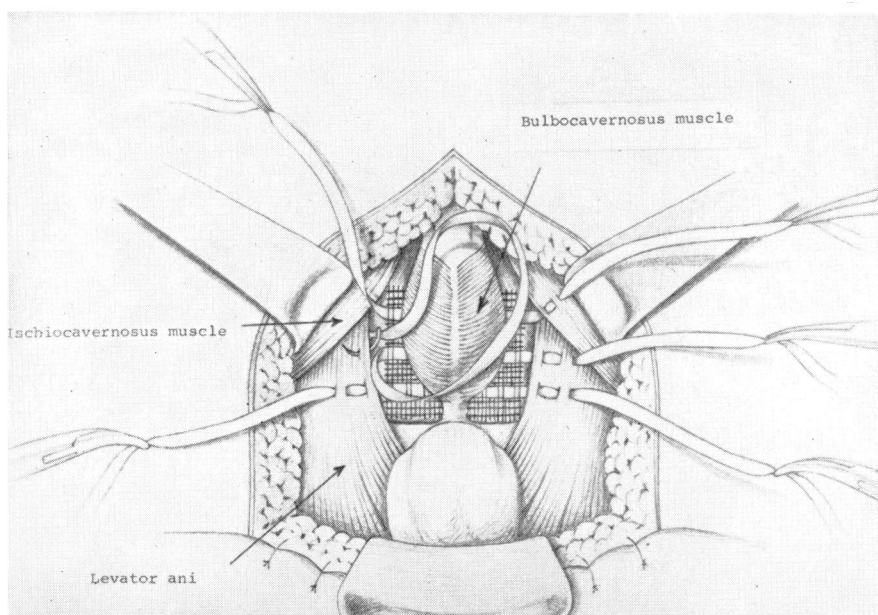


Fig. 3. Transfixion of the collagen prosthesis to the ischiocavernosus and levator ani muscles.

muscle, and the membranous urethra are freed carefully from all adjacent structures. The Foley catheter within the urethra facilitates the dissection at this point.

Ribbon gut,  $\frac{3}{8}$ " or, recently, an improved collagen prosthesis\* has been used to imbricate the membranous urethra and bulbocavernosus to the ischiocavernosus and levator ani muscles. This is done by passing the suture material anterior to the bulb of the penis and membranous urethra (Fig. 1) and tying the suture ends after they are passed through the pelvic floor musculature (Figs. 1-4). The mesh part of the prosthesis should be arranged to stay anteriorly to the bulbocavernosus and membranous urethra (Fig. 2). Adequate tying of the suture material, without undue pressure, is carefully done, encircling the urethra with the #18 Foley catheter in place (Fig. 4). This compresses the urethral conduit at this level and increases the action of the bulbocavernosus muscle.

Chromic O catgut sutures are placed through the medial borders of the levator ani muscles to bring them snugly into the median plane in front of the rectum. A Penrose drain is placed in front of the rectum and brought out through a separate stab incision in the skin. The wound

\* Supplied by Ethicon, Inc., Somerville, N. J.

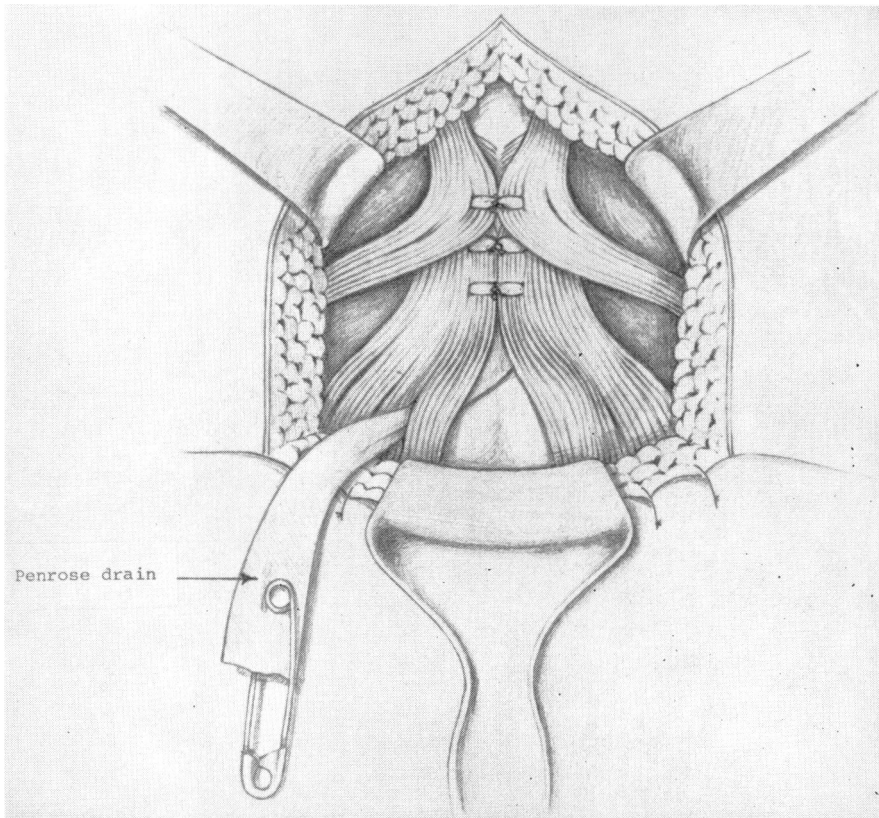


Fig. 4. When the ends of collagen prosthesis are tied, the collagen mesh completely encircles the bulb of the penis, angulates the membranous urethra and approximates the ischio-cavernosus and levator ani muscles.

is then closed in layers.

Postoperatively, the patient is given the proper chemotherapy and antibiotics, depending upon the preoperative urine culture. A liquid diet for the first three days is followed by a low residue diet for four days. The Foley catheter is left indwelling for 14 days. The patient is instructed to begin the previously taught perineal exercises on about the tenth postoperative day and these are continued after catheter removal, until control of micturition is satisfactory. The purpose of these exercises is to train the patient to use the pelvic floor to stop and start micturition by relaxing and contracting the pelvic musculature. Our usual method is to have the patient contract or elevate the perineal musculature and retain the contraction for 6 seconds (counts). This is done 25 times in succession at three or four periods of each day.

## SUMMARY OF CASES

<i>Patient and Unit #</i>	<i>Age</i>	<i>Incontinence</i>		<i>Date of Perineal Urethroplasty</i>	<i>Complica- tions</i>	<i>Results</i>
		<i>Cause</i>	<i>Date</i>			
W. C. FDH 10968	68	Radical Perineal Prostatectomy	1960	July, 1961	None	Cured
J. S. FDH 10944	62	Simple Perineal Prostatectomy	1959	Dec., 1961	None	Improved
F. M. FDH 260	62	Radical Perineal Prostatectomy	1951	Feb., 1962	None	Greatly Improved
W. B. FDH 6478	67	Open Perineal Prostatic Biopsy	1956	April, 1962	Wound Infection	Failure
J. A. FDH 4970	73	Radical Prostatect- omy (Perineal and Retropubic Approach)	1955	April, 1962	None	Cured
G. H. FDH 16654	66	Simple Perineal Prostatectomy	1958	May, 1962	Herpes Zoster	Greatly Improved
R. T. FDH 1559	77	Simple Perineal Prostatectomy	1952	June, 1962	None	Greatly Improved

At Francis Delafield Hospital, between July 1961 and April 1963, seven patients were operated upon for complete urinary incontinence following traumatic injury to the external sphincter (Table). Their ages varied from 62 to 77 years. Incontinence followed radical perineal prostatectomy in three patients (one of whom had a combined retro-pubic and perineal approach), simple perineal prostatectomy in three others, and an open perineal biopsy in one patient. The duration of incontinence varied between one and ten years. All seven patients had been using incontinence appliances. One of the patients with incontinence following radical perineal prostatectomy performed ten years ago had an attempt at correction of incontinence in 1956, using the rectus fascial sling technique, which failed.

In this preliminary report, two patients were cured, three greatly improved, one improved and one remained incontinent. Those who showed "great improvement" continued to have occasional urinary dribbling *after excessive exertion*. The regain of urinary control but persistence of some dribbling during coughing, sneezing or mild exertion is considered as "improved." The patient (F.M. FDM #260) who

had an attempt at correction utilizing the rectus fascial sling six years ago became continent by the described perineal urethroplasty except for minimal dribbling after severe exertion.

No side effects were seen from the use of collagen prosthesis which corroborates the laboratory animal studies of its behavior. One patient (W.B. FDH 6478), who had been totally incontinent for six years and remained incontinent after this attempted correction, developed wound separation on the first postoperative day after expelling a bulky bowel movement resulting from inadequate preoperative preparation. Wound infection and abscess formation resulted. Secondary closure of the wound after debridement of the sloughing tissue was unsuccessful, and perineal healing was completed through secondary granulation. Another patient (G.H. FDH #16654), who was incontinent for four years prior to the perineal urethroplasty, developed herpes zoster post-operatively. He developed severe pain along the right lumbar nerve roots, suprapubically and perineally. This caused a delay in the start of perineal exercises and in his ultimate recovery. Urethral injury occurred in one patient (J.A. FDH #4970) and temporary perineal leakage resulted. This ceased on catheter drainage and the patient became continent. There were no rectal injuries.

### *Summary*

A new technique of perineal urethroplasty for correction of urinary incontinence is presented. The rationale of the operation is to reinforce the second and third parts of the urinary sphincter by imbrication of the bulbocavernosus muscle and membranous urethra to the ischio-cavernosus and levator ani muscles and compression of the urethra. A new collagen prosthesis has been used without any detectable side effects.

This operation was performed on seven patients resulting in the cure of two patients, great improvement in three others, improvement in one and failure in one patient.

### ACKNOWLEDGMENT

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